

## Why is Runoff a Problem?

Stormwater runoff is any drainage event resulting from precipitation, including snowmelt. As more of the watershed is developed with impermeable surfaces such as roads, driveways, roofs and parking lots, less water can soak into the ground and is forced to “run-off”. This increased water flow will have a greater force resulting in a greater ability to cause erosion that is channeled into ditches, drainageways, storm sewers, or road gullies often ending up in streams and eventually Lake Cascade.

High flows of water also increase the amount of sediment, petroleum products, pesticides, fertilizers, bacteria, and metals that flow into the Lake.

Your property alone (known as a non-point source of pollution) probably is not a significant pollutant source, but the cumulative effect of all the properties in the Watershed is a significant source of pollutant delivery into Lake Cascade. Excess amounts of pollutants such as phosphorus cause nuisance algae blooms.

## Identifying Problems Caused by Runoff

### PROBLEM

- Is the water near shore cloudy?
- Is there an oily rainbow film on the water?
- Are there algal blooms, green scum, or abundant plant growth in the water?
- Are washouts, trenches, small piles of sediment, leaves, or debris found at the bottom of slopes?

### POSSIBLE CAUSE

- Excess sediment reaching the water
- Possible petroleum contamination
- Excess nutrients such as nitrate or phosphorus reaching the water
- Excessive runoff across the property



## What Can I Do?

Many people are not aware of the concepts of stormwater runoff and that it can contribute to both surface and ground water quality degradation. **Homeowners** around Lake Cascade are principally responsible for managing stormwater runoff from their property.

Traditionally, the objective of stormwater management has been to transport runoff as quickly as possible through the drainage system in order to prevent flooding and protect lives and property. This is referred to as quantity control. Although public health and safety are still the most important goals, other objectives must now be met as well, such as preservation of water quality for *recreation and fisheries*. Today it is necessary to balance both quantity and quality goals. This balance can be achieved through the voluntary implementation of Lake\*A\*Syst.

### Impact of Urbanization

The quantity or volume of stormwater runoff from the residential area around Lake Cascade depends on several factors including: (1) the intensity of a given storm event, (2) the duration of the event, (3) the amount of impervious area such as pavement, buildings and compacted soils, (4) soil type, and (5) land slope.

Urbanization around the lake increases the quantity of runoff, and therefore may have a serious impact on its quality. As shown in Figure 1 below, in a developed area where there are impervious surfaces (compacted soils, decks, rooftops, paved areas) more water runs off. Compared to an area of natural vegetation where rain-water soaks into the ground and returns to the air through evapotranspiration.

This fact sheet addresses the importance of managing stormwater runoff with *Best Management Practices (BMP's)*. BMP's are actions you can take to reduce your impact on the environment.

Two areas are covered:

**Reducing Pollutants in Runoff.** Pollutants can include bare soil, pesticides, fertilizers, petroleum, lawn clippings, and pet and animal waste.

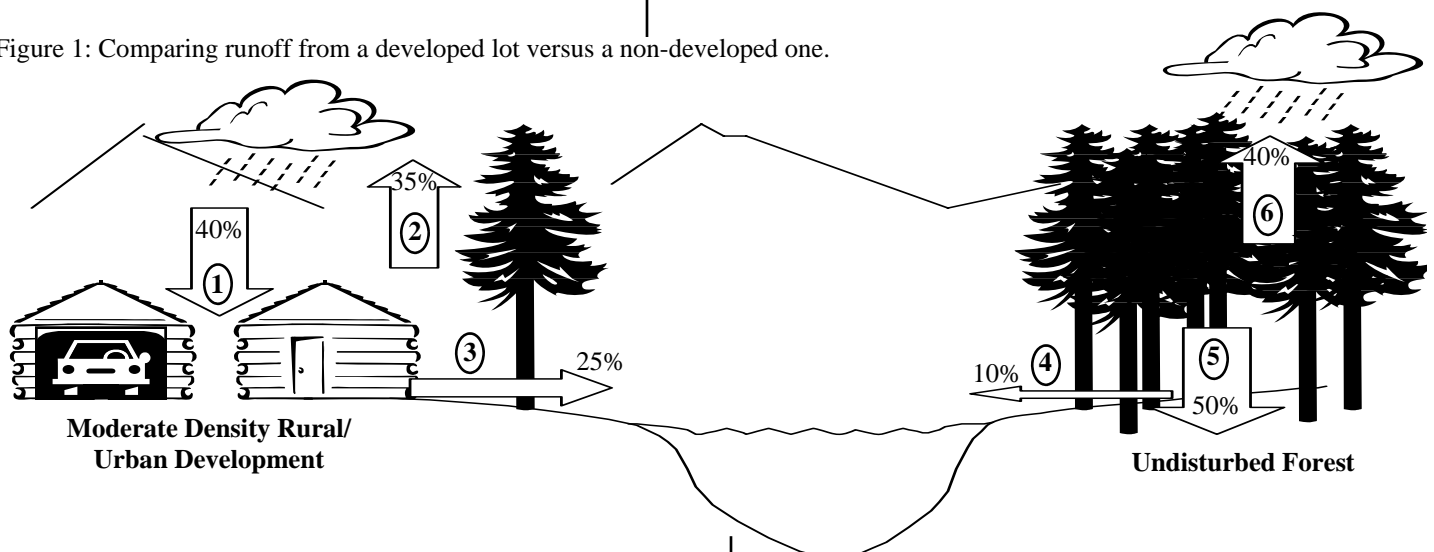
**Preventing and Minimizing Runoff.** This section describes BMP's you can adopt on your property to help protect and preserve water quality.

## Reducing Pollutants in Runoff

Stormwater is unavoidable, but its effects can be reduced by keeping harmful chemicals and materials out of the runoff. Urbanization around the Lake and within its watershed can have an adverse affect on the quality of stormwater runoff, which may have a serious impact on the lake and potentially your drinking water supply. Runoff usually consists of surface runoff from roads, driveways, and yards. These are known as *nonpoint* sources of pollution. Stormwater and snowmelt runoff collects and transports the following pollutants to surface and/or ground water:

- *Nutrients* such as phosphorus and nitrogen from fertilizers
- *Bacteria and viruses* from human and animal wastes
- *Organic chemicals* such as pesticides and petroleum products
- *Heavy metals* such as lead, copper, zinc and cadmium that are usually associated with sediments

Figure 1: Comparing runoff from a developed lot versus a non-developed one.



During a storm event in a developed area: **1)** Impervious areas decrease the amount of water allowed to soak into the ground; **2)** decreases the amount of water returned to the atmosphere through evapotranspiration; **3)** increases the amount of water running off the property, carrying pollutants.

In a non-developed area: **4)** The velocity of water flowing over the surface is kept in check by vegetation and the organic duff of the forest floor; **5)** allowing more water to soak into the ground; **6)** more water is readily available to evapotranspire back into the air.



- *Sediment*, which can be a composite of fine particulate matter such as silt and clay with chemically bound phosphorus, forest duff organic material, stones, sand, gravel, seed, glass, plastics, metals, and other fine residues. Sediment can smother fish eggs and degrade water quality.

**Phosphorus** often receives a good deal of attention when considering lake water quality because phosphorus affects the amount of algae growth seen in lakes.

### Pollution Prevention

Source control BMPs are nonstructural practices designed to **prevent pollutants** from entering stormwater. First, by eliminating the source of pollution and second by preventing pollutants from entering any runoff.

The first and most important source control practice is *good stewardship*. Your role as a good steward is essential in protecting and maintaining the quality of Lake Cascade. One of the easiest and most efficient ways to keep the Lake safe, clean, and inviting for fishing and recreational opportunities is to **PREVENT erosion and pollution** from happening. It is much easier to prevent a problem than it is to solve one. As the old saying goes: “an ounce of prevention is worth a pound of cure”.

Following are some potential pollution sources that can be found on your property, and the management practices for protecting Lake Cascade:

### Hazardous Household Products

This BMP promotes efficient and safe housekeeping practices such as storage, use, and cleanup, especially when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool/hot tub chemicals. The following are some common sense BMPs:

- Always use caution when handling any hazardous products. These products may contain toxic chemicals that can cause severe injury or death. When possible use **alternative products** that are less toxic.
- Change buying habits to purchase fewer products that might become hazardous household waste, and buy in quantities that can be used up.
- Store household hazardous products securely and away from children, pets, water, and sources of heat, sparks, and flames
- Store products above flood levels in basements and storage sheds.
- Store products in their original containers and keep them well labeled. Do not store chemicals in food containers.
- Read and follow use instructions, and product labels.

- Do not apply pesticides, fertilizers, and other chemicals if rain is expected within twenty-four hours.
- Use up all of the product before disposing, or give extra to friends.
- **Do not** dispose of household hazardous waste:
  - ♦ In trash
  - ♦ In storm drains or streams
  - ♦ In sink or toilet
  - ♦ On the ground
- **Do dispose** of household hazardous wastes through the Valley County Transfer site located at 240 Spink Lane (Take Spink Lane east off of Farm to Market Road, 5.5 miles north of Roseberry or 3 miles south of Lake Fork):
  - Motor oil is accepted with no charge and is recycled.
  - Car batteries will be accepted for a fee of \$5 charge.
  - Latex paint is accepted if it is stabilized with sand or kitty litter and is solid. Oil based or lead paint and paint thinner is not accepted.
  - Hazardous wastes are accepted several weeks each year at a free collection site. Call the Transfer Station for dates (634-7712).
  - Refer to the Handbook of Valley County Stormwater Best Management Practices for disposal techniques (BMPs 22-26).

### Vehicle Use and Engine Maintenance

Vehicle use is a potential source of pollutants to Lake Cascade via stormwater runoff. Cars and boats contribute pollutants such as heavy metals, oil and grease and other hydrocarbons through exhaust, leaks, spills, corrosion, and wear and tear of parts. These pollutants are either deposited onto roadways and carried into receiving waters by runoff or directly into the lake from boats and watercraft.

- Purchase only those items you need in amounts you can use.
- Recycle and reuse engine maintenance products when appropriate.



- Clean up oil stains and avoid outdoor spills of antifreeze, brake fluid, and other engine fluids.
- Used oil, antifreeze, and cleaners can be taken to the Transfer Station (634-7712).
- Never dump used oil, antifreeze, or gasoline down a storm drain, in a ditch, or on the ground. These wastes contain toxic compounds which can end up in Lake Cascade.
- Routine maintenance of your vehicle assures efficient fuel consumption, clean exhaust, and leak prevention.
- Try to wash vehicles on the lawn or commercial car wash. Do not use cleaners that contain ammonia, chlorinated solvents, petroleum distillates, or lye. Buy and use only nontoxic, **phosphate free**, biodegradable cleaners.

### Lawn and Garden Care

Lawn and gardens near the shore must be carefully planned and maintained to prevent possible contamination of stormwater runoff. Grass clippings, excess fertilizer and other yard wastes will wash away during storm events. Fertilizers for example may add nitrogen and phosphorus to the lake promoting algae and aquatic weed growth.

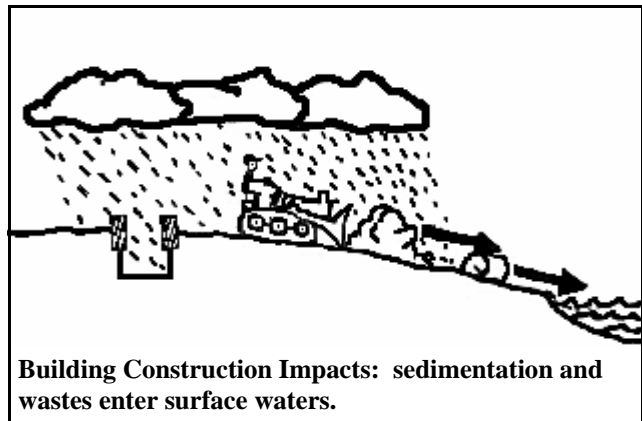
- Maximize the effectiveness of lawn fertilizers and thus minimize the quantity applied. Consider alternatives to chemical fertilizers such as organic mulch.
- Fertilizer and pesticide application within 15 feet of the Lake, streams and ditches, is **not encouraged**.
- Native vegetation should be considered as a quality alternative to cultured lawns and landscapes. Landscapes will revert to a native state if no maintenance is performed; planting native vegetation will hasten the process.
- Keep yard wastes out of nearby streams and the Lake to protect water quality.
- Burning yard waste is not an environmentally friendly alternative. Hydrocarbons and nutrients that are released contribute to water pollution as well as air pollution.
- Sweep clippings back onto the grass and compost leaves and garden wastes away from water on your property to recycle nutrients.
- Keep areas of bare soil to a minimum.

### Animal Wastes

Animal droppings can be troublesome in two ways. First, pet and stock wastes contain nutrients that can promote the growth of algae in streams and the lake. Second, these wastes are a source of gastrointestinal diseases. The risk of stormwater contamination increases if pet wastes are allowed to accumulate in animal pen areas or left on roads or driveways where runoff can carry them to drainage ditches and into the lake.



- Reduce the chance for manure associated with dogs, cats, cattle, horses, or ducks to be washed into the nearest water body.
- If animal manure is stacked, it should be applied to land. For best results manure should be broken up with a harrow to increase the filtering capacity of vegetation and the uptake of nutrients by plants. Land application of dog or cat waste is not recommended.



### Erosion Prevention

If you are adding on or building a new house, landscaping, or putting in a new driveway or road you need to consider the effects of construction and other activities that remove vegetation when clearing an area and exposing bare soil. Bare soil can be easily washed into nearby water bodies.

Excessive soil suspended within runoff that washes into nearby streams buries coarse-sized channel rock that is useful for fish spawning. This suspended sediment also carries excess phosphorus into the Lake, which encourages algae growth.

- To prevent unforeseen impacts, cover bare earth with a layer of straw mulch, fabric, or bark. This covering will keep the soil in place. A good rule of thumb for hay or straw is one 50 pound bale per 500 square feet. Also, be sure to replant any bare areas immediately after new construction activities.
- If you have rainspouts and gutters, check the flow to ensure that the rainwater is spread out evenly at the point of surface discharge. Direct the discharge to a grassy area, garden, or forest floor depression, where it can soak into the ground.



## Erosion Prevention Continued

- Stabilize exposed soil immediately after land disturbance for private road and driveway construction. Once vegetation is removed and soil exposed, the rate of erosion is greatly increased. Refer to the section below, Preventing and Minimizing Runoff, for some simple cost-effective measures that can be used to minimize erosion impact.

### Protecting the Riparian Zone of Streams and the Lake

The riparian zone is the moist soil area next to water bodies able to maintain plants. The width of the zone varies, from a few feet for small creeks to hundreds of feet wide along lowland areas of streams or rivers. Because the riparian zone is home to many plants and animals, it is the most important area of a lake or stream environment. The thick vegetation works to reduce erosion and filter out pollutants. Overhanging branches provide shade and a source of insects and seeds. As more of the riparian zone disappears, more wildlife is affected and the stream channel becomes unstable. An unstable stream channel causes further erosion and loss of stream habitat and structure. A riparian zone at the shoreline can serve as a filter strip for pollutants in stormwater runoff.

The following are practices for protecting the riparian zone.

- For new home and lot construction, retain a high percentage of native shrubs and trees along the shoreline. As a guideline for Lake Cascade, remove no more than 20% of the native vegetation for a walkway, beach access, and home safety.
- For existing residential and business development minimize disturbance in riparian vegetation along the lake front and streams. Replace non-natives with native plants. A desired minimum vegetative buffer between lawn applications, bare soil, and the lake would be a minimum of 20 feet wide.

## Preventing and Minimizing Runoff

Planning ahead is the first and most important step in preventing or minimizing erosion due to runoff. An easy way to do this is to pretend that you are a raindrop. In looking at the landscape or any impervious surfaces, which route would you travel? Obviously, you would want to take the easiest path downhill. Keeping that in mind, note any areas that runoff would choose to travel. Walk your property during and following heavy rain storm to inspect drainage patterns and areas of erosion.

## Site Planning

Site planning is an essential tool in preventing pollutants from being transported off-site. A general step-by-step process is recommended for those developing or redeveloping near water bodies, on steep slopes or gradients, and/or on highly erodible soils. Please check with the Valley County Planning and Zoning Department for more detailed information regarding these steps or modifications. The purpose of site planning is to reduce site runoff and erosion through planning considerations based on the conditions of your site. For more information please refer to the *Lake\*Asyst Landscape and New Construction* fact sheet.

### Long-term BMP's

- Limit paved, compacted dirt, and covered areas that prevent water from seeping into the ground.
- Invest in permanent stabilization practices for long-term protection of your property by planting new vegetation, installing **erosion control structures**, and diverting drainage. Maintain these areas to ensure their effectiveness. Use the *Handbook of Valley County Stormwater Best Management Practices* to help you decide which structures to install for erosion control. The handbook is available for review at the Valley County Planning and Zoning office in Cascade
- Retain trees and shrubs; trees provide a natural umbrella by shedding water and can reduce runoff by as much as 50%;
- Plan and complete an annual maintenance schedule to make sure that your runoff and erosion control plan is working to protect your property
- Limit clearing and grading on slopes. Minimize cutting and filling for roads, sidewalks, and footpaths to reduce erosion and still provide access.
- Avoid damaging adjacent property with temporary erosion control methods, because water does not stop flowing at your property line.

### Drainageways

- Use existing natural drainage systems such as a gulch or any low areas instead of digging new ditches.
- Design culverts and drainage structures to handle excessive amounts of runoff. Assistance is available from the Valley County Road Department (382-7195) or consult a professional engineer.
- Protect drainageways from sedimentation so they are able to carry storm water as intended.



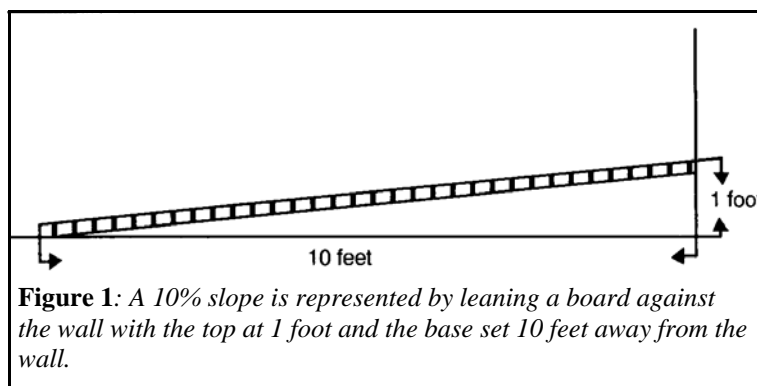
## Roads, Driveways, and Walkways

BMPs for control and management of stormwater runoff from existing public and private roads and driveways are essential for the prevention of water quality degradation of the Lake.

- Minimize semi-impervious and impervious surfaces.
- Incorporate a good gravel base into your private roads and driveways instead of only compacted dirt.
- Do not compact or pave wasted space such as corners near buildings that are not large enough for parking or driving.
- Maintain a good drainage and erosion control system for private roads and driveways: keep culverts unplugged, keep drainage ditches deep and vegetated, keep cut banks (above slope) and fill banks (below slope) from eroding by establishing vegetation.
- Locate walkways away from steeper slopes that have greater erosion potential; if you must cross a hillside, follow the contour of the slope.
- Use steps when a walkway must go directly up and down a slope, particularly near the waterfront.
- Minimize road crossings over water ways and cross at a right angle to the stream if possible.
- Sweep paved parking areas and walkways instead of washing them down with a hose, to prevent sediment, salt, and petroleum products from washing off in runoff; cover stockpiles of salt and sand with a tarp or store them in a building.
- Use vegetated roadside areas away from the lake to divert runoff and to store snow instead of impervious and semi-impervious surfaces close to the lake.
- Install water bars and open top box culverts on sloping roadways to slow and divert runoff into vegetated drainageways.
- Use paving stones instead of solid concrete for walkways; this allows water to seep around the stones instead of running off.
- Avoid creating paths straight down a slope because this causes erosion; compacted soil on footpaths also promotes excessive runoff.

## Landscaping and Construction

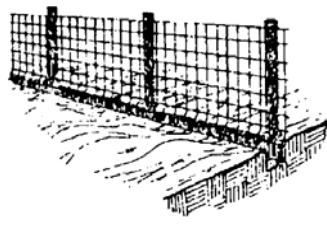
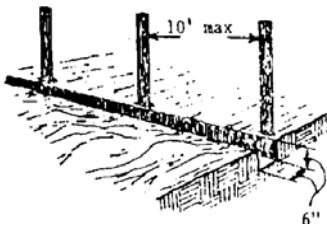
- When landscaping, stage construction so that one area is stabilized before another area is disturbed.
- Avoid construction in areas with:
  - little vegetative cover; preserve existing cover
  - erodible soils (sands, or soils that appear fluffy when dry)
  - mainly bedrock with a thin covering of soil
  - steep slopes of greater than 10% (see figure 1 to picture a 10% slope)



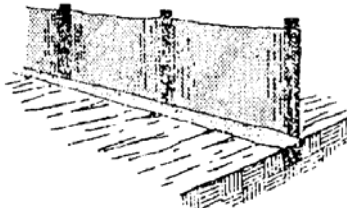
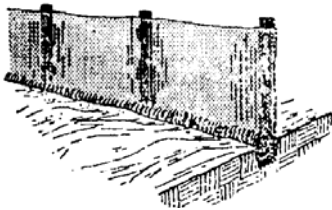
- Control erosion during construction by using temporary methods such as: **diversions** to carry water away from the construction site to where it can be safely dispersed, or **silt fences or straw bales** to trap sediments before they enter the water; a combination of methods may be the best solution (see Figures 2 and 3 on page 7).
- Use only clean fill (free from debris and dirt) such as rock, sand, or gravel near lakes and streams.
- Use only solid concrete forms such as interlocking blocks or slabs; do not use treated timbers or railroad ties.
- Make sure utility trenches are drained of water, backfilled, seeded, and mulched.
- Inspect construction projects immediately after initial installation of erosion control measures, during construction, following any severe rainstorm, before reseeding, and when nearing the completion of construction work; temporary erosion controls should be removed; ensure that stabilization is complete and drainageways are in proper working order.



1. Set posts and excavate a 6x6 trench upslope along the line of posts.
2. Staple wire fencing to the posts.

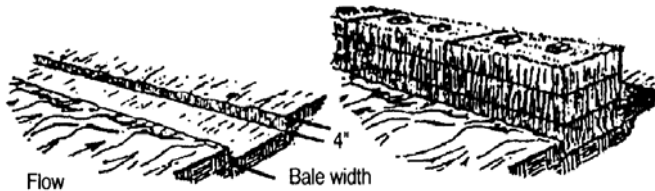


3. Attach the filter fabric to the wire fence and extend it into the trench.
4. Backfill and compact the excavated soil.

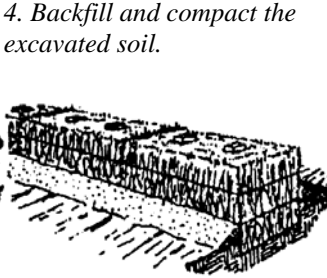
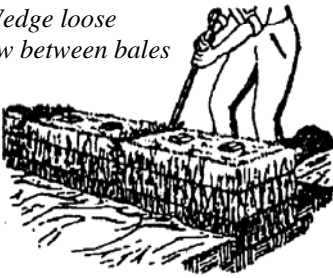


**Figure 2:** Constructing a silt fence to slow runoff and prevent erosion.

1. Excavate the trench.
2. Place and stake straw



3. Wedge loose straw between bales
4. Backfill and compact the excavated soil.



**Figure 3:** Constructing a straw bale barrier to slow runoff and prevent erosion.

## Buildings and Runoff

- Install rain gutters along the edge of rooftops to help carry water off of the roof and away from the building to areas where soil will not be eroded; make sure there is erosion protection where the gutters outlet onto the soil.
- Keep gutters free from debris and draining properly.
- Pave patios with flagstones or decay-resistant wood blocks instead of solid material to permit some water to seep around the stones or blocks.
- If you are building a new house or garage, and design considerations are flexible, position rooftops so they are perpendicular to the slope, instead of parallel, to slow down runoff as shown below.



*Roofline perpendicular to slope slows down runoff*



*Roofline parallel to slope increases potential for runoff damage*



***Assessing and preventing the risk of lake water contamination from***

**Stormwater Runoff**

**Home-Owner Risk Assessment Work Sheet**

ASSESSMENT 1 – *Reducing Pollutants in runoff*– The assessment table below will help you identify potential environmental risks related to Lake Cascade and the stormwater runoff from your property. For each question indicate your risk level in the right-hand column. Some choices may not correspond exactly to your situation. Choose the response that best fits. When finished turn to the **Action Checklist** on page 11 and record your medium and high-risk practices. Your goal is to lower your risks. Use the BMP recommendations on pages 1-7 to help you decide how to best reduce pollutants in runoff.

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Automotive Wastes:</b>	Oil drips and fluid spills are cleaned up. Dirty car parts and other vehicle wastes are kept out of runoff.	Drips and spills are not cleaned up. Car parts and other vehicle wastes are left on unpaved areas outside.	Used oil, antifreeze, and other wastes are dumped in ditch or onto the ground.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Vehicle Washing:</b>	Vehicles washed on a lawn or gravel drive. Runoff diverted to vegetated areas. Phosphate free soap is used.		Vehicles are washed on an impervious surface and runoff runs directly into lake or stream. Soap type unknown.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Storage of pesticides and other chemicals:</b>	Chemicals are stored in waterproof containers in a garage, shed, or basement that is protected from storm water.	Chemicals are stored in waterproof containers but within reach of storm water.	Chemicals are stored in non-waterproof containers outdoors or within reach of storm water.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Handling and use of pesticides, fertilizers, and other chemicals:</b>	Any spills are cleaned up immediately. Alternatives to chemicals used when possible. Chemicals are applied according to the label.	Chemical applications used. Spills are not cleaned up.	Spills are not cleaned up. Products are used in higher amounts than what the label recommends.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Pet and animal wastes:</b>	Buried away from gardens, wells, or ditches, wrapped and placed in the garbage for disposal.	Animal wastes are left to decompose on grass or soil. Wastes are scattered over a wide area.	Animal wastes are left on paved surfaces, concentrated in pen or yard areas, or dumped in a ditch.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High



ASSESSMENT 1 CONTINUED– *Reducing pollutants in runoff.*

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Grass clippings, leaves, and other yard waste:</b>	Grass clippings, leaves and other yard wastes are swept off paved surfaces and onto lawns away from water flow routes. Leaves and other wastes are composted.		Leaves and other yard wastes are raked into piles near the lake and burned on-site.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

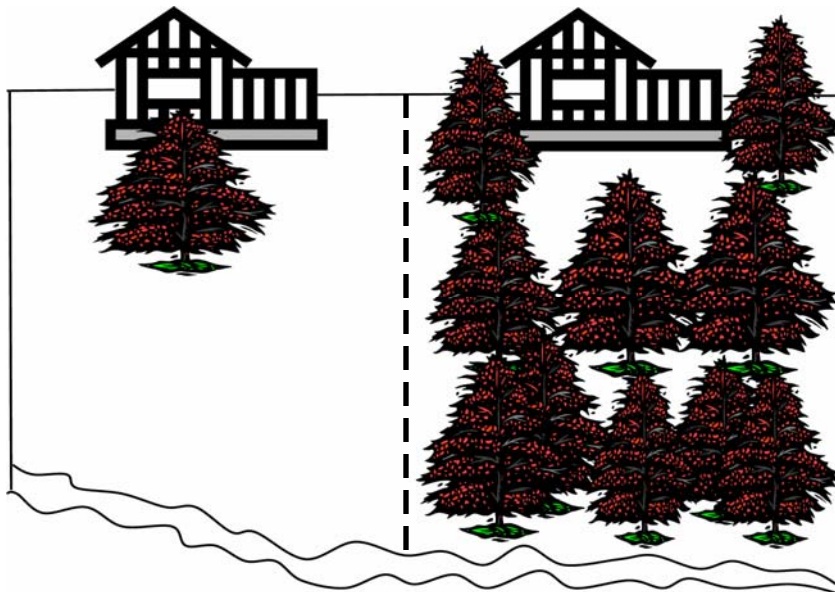
ASSESSMENT 2 – *Landscaping and Site Management to Control Runoff*- for each question in the assessment table below indicate your risk level in the right-hand column. Select the answer that best matches your situation. Afterward record your medium and high-risk practices in the **Action Checklist** on page 11. Use the BMP recommendations on

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Bare soil, gardens, &amp; construction projects</b>	Areas of bare soil are seeded and topped with a layer of mulch or straw. Sediment retention barriers (straw bales, soil fence) are used especially on steeper slopes until grass is established.	Soil is left bare during a construction project, but natural features slow and treat most runoff.	Soil is left bare and no natural features or sediment retention barriers are used.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <hr/> <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Proximity to surface water:</b>	>500 feet to surface water.	300-500 feet to surface water.	10-300 feet to surface water.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Impervious areas (rooftops, paved, and concrete surfaces):</b>	Paved surfaces are minimized; pavers used instead. Runoff from impervious areas diverted into vegetated buffer to prevent drainage directly to the lake or stream.	Some small areas are paved for patios.	A lot of surfaces on property are impervious to water. These areas also drain water directly into the lake or a stream.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High <hr/> <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Ratio of total lot that is impervious:</b>	0-19%	20-40%	>40%	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Roof Drainage:</b>	Downspouts and drip lines direct roof drainage onto lawn, garden, or vegetated area where water soaks into the ground.	Some downspouts and drip lines discharge water onto paved surfaces or grassy areas where water runs off.	Most or all drip lines or downspouts discharge onto paved or bare soil surfaces, or downspouts run directly to a stream entering the lake.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High



ASSESSMENT 2 CONTINUED– *Preventing and Minimizing Runoff Impact.*

	LOW RISK	MEDIUM RISK	HIGH RISK	YOUR RISK
<b>Landscaping and buffer strips:</b>	Yard is landscaped to slow the flow of stormwater and provide areas where water soaks into the ground. Buffer strips of thick vegetation are left along streams or lakeshores.	No areas are landscaped to encourage water to soak in, but yard is relatively flat and little runoff occurs. Mowed grass or spotty vegetation exists adjacent to a stream or lake.	There is no landscaping to slow the flow of stormwater, especially on steep slopes, erodible properties. Stream banks or lakeshores are eroding.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Sediment basin, sediment trap, or buffer strips will be used:</b>	In problem areas (problem areas are defined as areas adjacent to waterways, areas of highly erodible soils and/or steep slopes, and wellheads) stormwater detention ponds, buffer strips or other devices installed to slow water flow.		No landscape changes made to slow the flow of stormwater, especially on steep erodible slopes.	<input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High



To help prevent erosion, leave existing vegetation or establish a buffer strip of thick vegetation along streambanks and the lakeshore.



## **ACTION CHECKLIST**

### Stormwater Management

<b>Write all high and medium risks below.</b>	<b>What can you do to reduce the risks?</b>	<b>Set a target date for action.</b>
<i>Sample:</i> Runoff from driveway runs directly into a stream or the lake.	Slow movement of water running down the driveway with culvert boxes that divert storm-water into heavily vegetated areas.	One week from today: June 1

### **You Can Make a Difference**

An essential part of stormwater management is keeping water from leaving your property, or at least slowing its flow as much as possible. Many home sites slope towards Lake Cascade and its tributaries. You can make a difference by landscaping your property with native shrubs and grasses to encourage water to soak into the ground.